



Mapefill

High-flow non-shrink cementitious anchoring grout



WHERE TO USE

For precision anchoring of machinery and metallic structures.

Some application examples

- Anchoring machine tools by casting below the machine base.
- Anchorage metallic carpentry.
- Filling rigid joints between elements in concrete and precast concrete structures.
- Installations below wall level.

TECHNICAL CHARACTERISTICS

Mapefill is a pre-blended powdered grout composed of high strength cement, graded aggregates and special additives with an expansive agent formulated by the MAPEI research laboratories.

Mapefill when mixed with water is transformed into a fluid grout without segregation that is able to fill intricate spaces.

Mapefill, due to its expansive agent, is characterized by a total absence of shrinkage in its plastic phase (ASTM norm 827) and its hardened phase (UNI norm 8147) and develops very high early flexural and compressive strength.

Mapefill also has the following qualities:

- excellent impermeability to water;
- excellent adhesion to iron and concrete;

- excellent resistance to dynamic mechanical stress;
- modulus of elasticity and thermal expansion coefficient similar to those of high quality concrete;
- **Mapefill** does not contain metal aggregates and aluminium dust.

Mapefill meets all the main requirements for ENV 1504-9 (*"Products and systems for the protection and repair of concrete structures; definitions, requirements, quality control and conformity assessment. General principles for the use of products and systems"*) and the minimum requirements for EN 1504-6 (*"Anchoring steel reinforcement"*).

RECOMMENDATIONS

- Do not use **Mapefill** for structural repair by pouring in forms (use **Mapegrout Hi-Flow**).
- Do not use **Mapefill** for vertical applications by spray or trowel (use **Mapegrout Thixotropic**).
- Do not add cement or additives to **Mapefill**.
- Do not add water when the mix begins to set.
- Do not use **Mapefill** if the bag is damaged or has already been opened.
- Do not apply **Mapefill** at temperatures below +5°C.

APPLICATION PROCEDURE

Preparing the substrate

- Remove all deteriorated concrete down to sound substrate.

Mapecfill



Repairing rigid joints of a highway bridge with Mapecfill

DTECHNICAL DATA (typical values)

PRODUCT IDENTITY

Type:	CC
Consistency:	powder
Colour:	grey
Maximum aggregate size (mm):	2.5
Bulk density (kg/m ³):	1,300
Dry solids content (%):	100
Chloride ions content: - minimum requirements ≤ 0.05% - according to EN 1015-17 (%):	≤ 0.05
Storage:	12 months in original packaging in a dry place
Hazard classification according to EC 1999/45:	irritant. Before using refer to the "Safety instructions for preparation and application" paragraph and the information on the packaging and Safety Data Sheet
Customs class:	3824 50 90

APPLICATION DATA (at +20°C - 50% R.H.)

Colour of mix:	grey
Mixing ratio:	100 parts of Mapecfill with 14-15 parts water (approx. 3.50-3.75 l per 25 kg sack)
Slip value of mortar according to EN 13395-2 (cm):	> 45
Density of mix (kg/m ³):	2,250
pH of mix:	> 12.5
Application temperature range:	from +5°C to +35°C
Pot life of mix:	ca. 1 h

FINAL PERFORMANCE (14.5% blending water)

Performance characteristic	Test method	Minimum requirements according to EN 1504-3	Product performance
Compressive strength (MPa):	EN 12190	> 80% of the value declared by the manufacturer	30 (after 1 day) 55 (after 7 days) 70 (after 28 days)
Flexural strength (MPa):	EN 196/1	none	5 (after 1 day) 8 (after 7 days) 9 (after 28 days)
Modulus of elasticity in compression (GPa):	EN 13412	none	27 (after 28 days)
Bond strength to concrete (MC 0.40 type substrate - water/concrete ratio = 0.40) according to EN 1766 (MPa):	EN 1542	none	≥ 2 (after 28 days)
Impermeability to water - penetration depth - (mm):	EN 12390/8	none	< 5
Free expansion in the plastic phase (%):	ASTM 827	none	≥ 0.3
Drawing resistance of the steel rods - movement under a 75 kN load (mm):	EN 1881	< 0,6	< 0.1
Adherence tension of rods anchored with Mapecfill (MPa):	EN 1881 (*)	none	> 25
Reaction to fire:	Euroclass	value declared by manufacturer	A1

(*) Sample made according to EN 1881 standards, assuming uniform stress distribution between the reinforcing rods and Mapecfill

- Scarify the surface and eliminate completely dust, oils, grease, debris and laitance.
- Soak the sides of the cavity to be filled with water. Before pouring, wait for the excess water to evaporate. To facilitate the elimination of unabsorbed water, use compressed air and a sponge if necessary.

Preparing the grout

Pour in a concrete mixer the amount of water corresponding to the desired consistency (see Table). Start concrete mixer and slowly add **Mapefill** continuously.

Mix for 1-2 min., remove from the sides of the concrete mixer any powder that is not well blended; remix for another 2-3 minutes until a fluid homogeneous paste is obtained. According to the quantities to be prepared, a grout mixer or a mechanical mixer can be used paying careful attention to avoid the formation of air bubbles.

Mixing by hand is not recommended.

Application

Pour **Mapefill** from one side only in a continual flow encouraging the discharge of air bubbles into the appropriate area which should not be less than twice the diameter of the bar to be anchored.

The use of **Mapefill** for connecting precast concrete elements and the filling of rigid joints is recommended for thicknesses up to 60 mm.

It is not necessary to vibrate the grout mechanically; to facilitate the filling of spaces that are particularly difficult, use a wood list or an iron rod.

Addition of fine gravel

For filling cavities that have dimensions greater than those indicated, add **Gravel 6-10** not exceeding 30% by weight of **Mapefill**.

Because certain characteristics may vary, such as workability and strength, it is advisable to carry out preliminary tests at the work site or to consult our Technical Service.

Instructions to be observed before and after application

- At temperatures around +20°C, no particular precautions are required.
- In the hot weather it is advisable not to expose the material to sun and to use cold water in preparing the mix.
- In low temperatures it is advisable to use water that is at +20°C.

- After casting, **Mapefill** must be properly cured; the surface of grout exposed to the air must be protected from rapid water evaporation that can cause the formation of surface cracks due to plastic shrinkage especially in hot and/or windy weather.

- Spray water on surface exposed to air the first 24 hours of curing or apply an anti-evaporant.

Cleaning

Fresh grout can be removed from tools with water. After curing, cleaning becomes very difficult and can only be done mechanically.

CONSUMPTION

1.95 kg/dm³ of cavity to be filled.

PACKAGING

Mapefill is available in 25 kg bags.

STORAGE

Store in a dry, sheltered place in original, unopened packaging.

Manufactured in compliance with the regulations of the 2003/53/EC Directive.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Mapefill contains cement that when cement in contact with sweat or other body fluids produces an irritant alkaline reaction and allergic reactions to those predisposed. Wear gloves and protective goggles. For further information refer to the Safety Data Sheet.

PRODUCT FOR PROFESSIONAL USE.

WARNING

Although the technical details and recommendations contained in this data sheet correspond to the best of our knowledge and experience, all the above information must, in every case be taken as merely indicative and subject to confirmation after long-term practical applications; for this reason, anyone who intends to use the product must ensure beforehand that it is suitable for the envisaged application. In every case, the user alone is fully responsible for any consequences deriving from the use of the product.

All relevant references for the product are available upon request and from www.mapei.com



Anchoring of metallic carpentry with Mapefill



Flow test recording to UNI 13395-2



Determination of restrained expansion according to UNI 8147

Mapefill



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